
Application of topical corticosteroids to sites of positive immediate-type allergy skin tests to relieve itching: results of a double-blind, placebo-controlled trial

John M. Kelso, MD

Background: In many allergy clinics topical corticosteroid cream is applied to sites of positive skin tests in an attempt to alleviate itching.

Objectives: To determine whether or not this practice is effective.

Methods: Patients with 5 or more positive skin test results were randomly assigned to 1 of 3 groups after skin test result reading: application of 2.5% hydrocortisone in moisturizing cream, moisturizing cream alone, or no topical application. Immediately after the skin test results were read (baseline) and at 5, 15, and 30 minutes, patients rated their itching on a 100-mm visual analog scale.

Results: Average itch scores for all groups combined were 44, 33, 22, and 12 at 0, 5, 15, and 30 minutes, respectively. No differences were found among the groups at any time point. No correlation was found between the baseline itch scores and age, sex, number of positive skin test results (≥ 3 -mm wheals), or number of large positive skin test results (≥ 15 -mm wheals).

Conclusions: The application of corticosteroid cream to sites of positive immediate-type allergy skin tests does not provide relief of itching; therefore, this practice should be abandoned. Instead, patients should be informed that any itching they may be experiencing will substantially resolve during the next 30 minutes and that application of such topical treatment will not hasten the relief of itching.

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INTRODUCTION

Immediate-type allergy skin testing is an important part of the evaluation of patients with suspected IgE-mediated diseases such as allergic rhinitis. The wheal-and-flare (urticarial) responses seen at the sites of positive skin tests are the result of histamine release from skin mast cells. This histamine can also cause itching of the skin. In an attempt to alleviate patient discomfort from this itching, the practice in many allergy clinics is to offer patients the topical application of a corticosteroid cream to the sites of positive skin tests. No studies have been published to indicate that this practice is effective, and given the mechanism and timing of activity of corticosteroids, little rationale exists for the practice. It may be that the steroid relieves itching, that simply having the cream applied helps, or that time alone makes the itch resolve. This study was performed to determine whether applying topical corticosteroid cream to sites of positive immediate-type allergy skin tests alleviates itching.

METHODS

This study was approved by the institutional review board of the Naval Medical Center in San Diego, CA. All patients 18 years of age or older undergoing immediate-type allergy skin tests in the allergy clinic were eligible to be screened for participation. Patients had the nature of the study briefly explained to them by 1 of the 3 staff allergists before undergoing skin testing. If the patient expressed interest in the study, he or she was given an institutional review board–approved information sheet to read while waiting to be skin tested. The nurse or technician performing the skin testing then asked the patient if he or she was participating in the study. Patients who agreed to participate provided oral informed consent based on the discussion with the allergist and the information sheet. Skin tests were performed by the prick method on the back. Participants who had 5 or more positive (at least 3-mm wheal and at least 10-mm flare) skin test results were randomly assigned (by taking the next number from a random number table with 120 values of 1, 2, or 3) to 1 of 3 groups: application of hydrocortisone (compounded to a final concentration of 2.5%) in moisturizing cream (Vanicream, Pharmaceutical Specialties Inc, Rochester, MN), the moisturizing cream alone, or no topical application. Immediately after the skin test results were read and the ink marks wiped off with alcohol (baseline) and 5, 15, and 30 minutes later, patients were asked to rate their level of itching by placing a mark on a 100-mm visual analog scale, with “no

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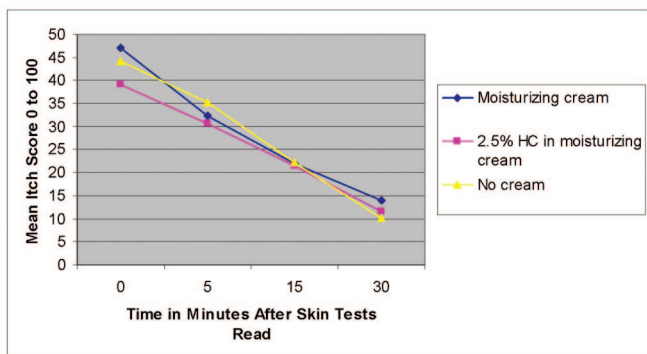


Figure 1. Itch score vs time.

itch at all” at one end and “worst possible itch” at the other end with the instruction, “Please put a mark on the line at the point that best describes how much itch you are having right now.” The patients were given a clean, separate scale for each measurement, without reference to their previous scores. The scores were subsequently measured with a ruler with 1-mm increments and the score recorded as the number of millimeters from 0 to 100.

Statistical analysis was performed using Excel Data Analysis (Microsoft Corporation, Redmond, WA). The mean vi-

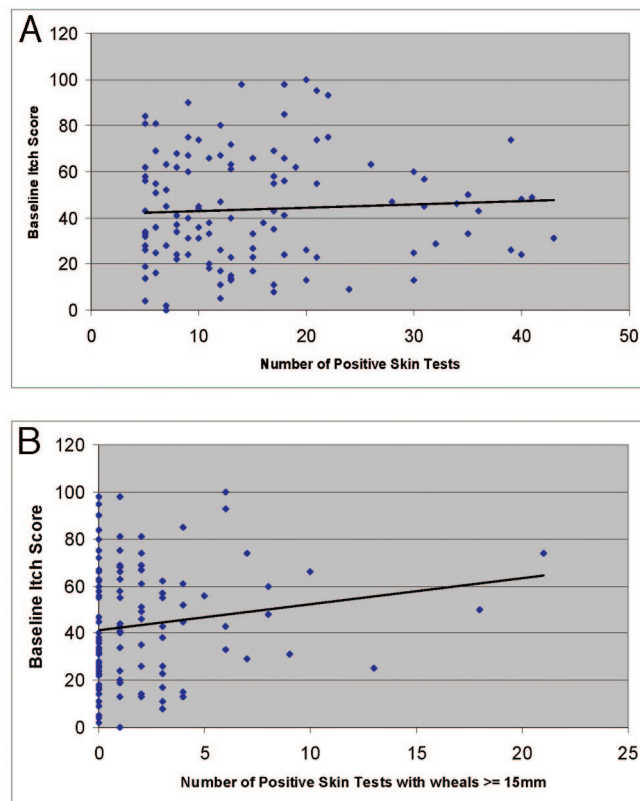


Figure 3. A, Baseline itch score vs number of positive (≥ 3 -mm wheal) skin test results. B, Baseline itch score vs number of large positive (≥ 15 -mm wheal) skin test results.

sual analog scale scores for the 3 groups at each time point were compared by analysis of variance. Comparisons of baseline itch scores and age, number of positive skin test results, and number of large positive skin test results were by regression analysis. Comparisons of baseline itch scores and sex was by *t* test.

RESULTS

A total of 120 patients were randomized, 40 into each of the 3 groups. There were 83 men and 37 women. The average number of positive skin test results (at least 3-mm wheal and at least 10-mm flare) was 15.

The average visual analog scale itch score for all 3 groups combined was 44 at baseline and declined to 33 at 5 minutes, 22 at 15 minutes, and 12 at 30 minutes. No differences were found among the groups at any time point (Fig 1).

No correlation was found between the baseline itch scores and patient age (Fig 2a). Baseline itch scores were higher in women than men, but the absolute difference was small and did not reach statistical significance (Fig 2b). No association was found between baseline itch score and the total number of positive (≥ 3 -mm wheal) skin test results (Fig 3a) or the number of large positive (≥ 15 -mm wheal) skin test results (Fig 3b).

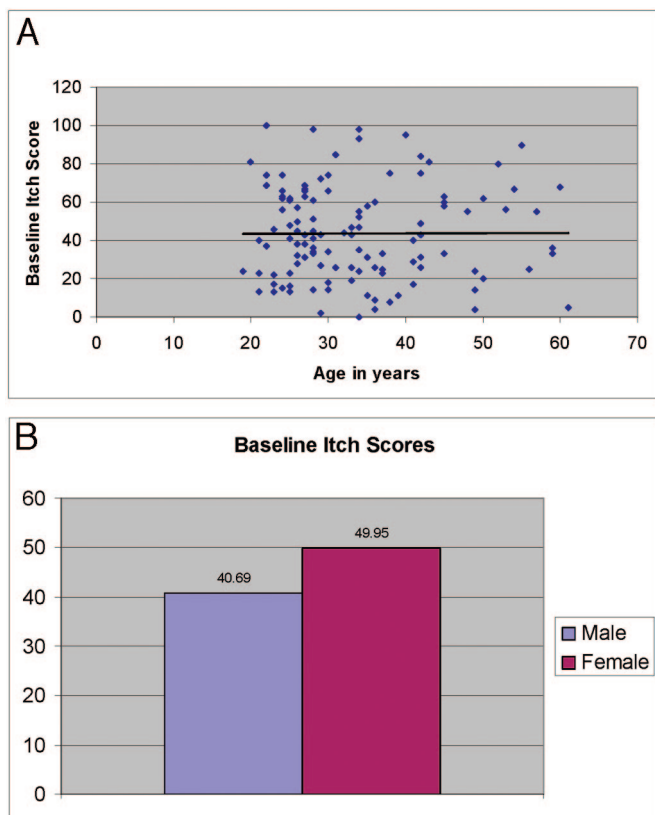


Figure 2. A, Baseline itch score vs age. B, Baseline itch score vs sex.

DISCUSSION

Although oral corticosteroids are widely regarded as effective for the relief of chronic urticaria¹ and although several weeks of treatment with high-potency topical corticosteroids have demonstrated effectiveness in certain mast cell-mediated skin disorders,^{2,3} no studies have examined the short-term effectiveness of topical corticosteroids on the pruritic aspect of hives or sites of positive immediate-type allergy skin tests. The current study demonstrates that the itching associated with positive skin tests largely resolves spontaneously over the course of 30 minutes and that the application of corticosteroid cream does not hasten the resolution of this itching.

One might imagine that there could be some placebo effect of putting on a cream that patients are told will relieve their itching. In this study patients were told that it was not known if the cream would help; thus, any placebo effect could have been diminished for the 2 groups who had the moisturizing cream, with or without the steroid cream, applied. However, the second control group in this study received no cream at all and thus might have had a "negative placebo" effect, since they were deprived of even a possibly effective treatment. Nonetheless, the itching in the group who received no topical treatment at all did not take any longer to resolve. Thus, continuing to apply steroid cream for some presumed placebo effect is not helpful.

There was a broad range of perceived itching, with baseline itch scores (immediately after skin test results were read) covering the entire range of the visual analog scale from 0 to 100. It is conceivable that some patient characteristics such as age or sex could predict who might have greater itching, but neither of these parameters correlated with itch scores. It would seem logical that patients with greater numbers of positive skin test results, or a greater number of large positive skin test results, would have more itching. However, these

values also did not correlate with baseline itch scores. Thus, it seems that patients undergoing allergy skin testing will experience a broad range of perceived itching associated with positive test results, but that there are no reliable parameters to predict an individual patient's level of pruritus.

In conclusion, the application of topical corticosteroid cream to the sites of positive immediate-type allergy skin tests does not provide relief of itching beyond that of vehicle cream alone or time alone. Therefore, the practice of applying topical corticosteroid cream to the sites of positive skin tests should be abandoned. Instead, patients should be informed that any itching they may be experiencing will substantially resolve during the next 30 minutes and that application of such topical treatment will not hasten the relief of itching.

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Requests for reprints should be addressed to:
John M. Kelso, MD
Division of Allergy, Asthma and Immunology
Scripps Clinic
10666 North Torrey Pines Rd
La Jolla, CA 92037
E-mail: kelso.john@scrippshealth.org